7.4 notes

Dividing Radical Expressions

The Quotient Rule for Radicals (pg. 455 – 456)

For any real numbers $\sqrt[n]{a}$ *and* $\sqrt[n]{b}$ *and* $b \neq 0$ then $\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$

Examples:
Simplify

$\sqrt[3]{\frac{27}{125}}$ $\sqrt{\frac{25}{y^2}}$ $\sqrt{\frac{16x^3}{y^8}}$ $\sqrt[3]{\frac{27y^{14}}{8x^3}}$

Divide and, if possible, simplify

$\frac{\sqrt{80}}{\sqrt{5}}$ $\frac{5\sqrt[3]{32}}{\sqrt[3]{2}}$ $\frac{\sqrt{72xy}}{2\sqrt{2}}$ $\frac{\sqrt[4]{18a^9b^5}}{\sqrt[4]{3b}}$

Rationalizing Denominators or Numerators with one Term (pg. 457)

Rationalizing the denominator or numerator means to write the expression as an equivalent expression but without a radical in the denominator or numerator.
To do this multiply by 1 under the radical to make the denominator of the radicand a perfect power or multiply by 1 outside the radical.

Examples: Rationalize the denominator

$\sqrt{\frac{7}{3}}$ $\sqrt[3]{\frac{5}{16}}$ $\sqrt{\frac{4}{5b}}$ $\frac{\sqrt[3]{a}}{\sqrt[3]{25bc^5}}$ $\frac{3x}{\sqrt[5]{2x^2y^3}}$

Rationalize the numerator

$\frac{\sqrt[3]{4a^2}}{\sqrt[3]{5b}}$